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VIII.—*On Anacharis Alsinastrum, a supposed new British Plant.*
By CHARLES C. BABINGTON, M.A.; with a *Synopsis of the species of Anacharis and Apalanthe.* By J. E. PLANCHON, doct. ès sc.*

[With a Plate.]

BEFORE describing the plant to which this paper more especially refers, it is desirable to state the reasons which have caused the adoption of the generic name *Anacharis* rather than *Udora*. By the kindness of Sir W. J. Hooker I have had an opportunity of examining the numerous specimens of plants referable to these and allied genera preserved in his Herbarium in company with my friend Dr. Planchon, its efficient Curator; and I take advantage of this opportunity of acknowledging my obligations to him for the very liberal manner in which he has placed his manuscript notes at my disposal. In Richard's Memoir upon the Order *Hydrocharideæ*, where the genera *Elodea* and *Anacharis* were characterized, only the male flowers of the latter are described and figured. In the Herb. Hooker. there are male and female specimens, collected by Tweedie in La Plata, which agree well with Richard's description of *Anacharis (callitrichoides)* taken from Montevideo specimens of the male plant. They differ from Drummond's Saskatchewan *Udora (A. canadensis, Planch.)* by having petals to the male flowers, and their sheaths less inflated: it seems probable that this is the *Elodea canadensis* of Michaux, who (or Richard) has apparently been misled to consider it as of the genus *Elodea* by the very great resemblance of its female flowers to the hermaphrodite flower of *E. guyanensis*. Indeed, in the absence of the males, the female flowers of some species of *Anacharis (A. Alsinastrum* for example) might well pass for hermaphrodite flowers from which the anthers had been accidentally removed: the female flower of *A. Alsinastrum* differs from the hermaphrodite flower of *E. guyanensis* (Rich.) solely by wanting

* Read before the Botanical Society of Edinburgh, 9 Dec. 1847.
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the anthers (the filaments existing), and in the somewhat differently shaped stigmas; in these respects agreeing with Nuttall's description of his genus *Udora*. It would seem from these facts that Richard's *Anacharis* is the male of Nuttall's *Udora*, in which genus also *Elodea canadensis* (Michx.) must probably be placed.

It should be observed that the 'Fl. Boreali-Americana' was published, from his father's notes, by the younger Michaux in 1803, and that as the genus *Elodea* is found there, it would appear that he is the true author of the name, and that the *E. canadensis* is therefore a triandrous plant. But the name *Elodea* is expressly claimed by Richard (Mém. de l'Institut. 1811, Pt. 2. p. 4) in these words: "genre encore peu connu, et auquel j'ai donné le nom d'*Elodea*;" and as it is well known (as I learn from Dr. Planchon) that Richard greatly assisted the younger Michaux in the preparation of his work, although he did not allow his name to be placed on its title-page, there can be no doubt that this genus was named and described by him. This will account for the North American plant being placed in Triandria, not Dioecia; for *E. guyanensis* is triandrous, and the look of the plants is so similar, that Richard might well be led to consider *E. canadensis* as of the same structure when inspecting dried specimens alone. Of the hermaphrodite structure of *E. guyanensis* Richard had convinced himself by seeing it alive in its native waters, and it is highly probable that he saw only the female flowers of *E. canadensis*, with three barren filaments, and considered them as hermaphrodite.

I need scarcely remark, that *Anacharis* (1811) is by far an older name than *Udora* (1818), and that as it has been shown, it is hoped conclusively, that they are synonymous, the former must be employed. Nuttall does not seem to have seen Richard's original paper (Mém. Inst. 1811, Pt. 2), for he quotes a figure of the seed from the 'Annales du Muséum,' where a copy of that part of the plate of *Elodea* is inserted. Had he seen the memoir itself, he would doubtless have identified his plant with the genus *Anacharis*, and not have conferred a new name upon it.

In the Hookerian Herbarium a plant is preserved collected by Schweinitz in the United States of America, which Dr. Planchon has determined to belong to the genus *Elodea*, Rich., but as that name is employed elsewhere, he proposes to name it *Apalanthe Schweinitzii*.

The genus *Anacharis* may be characterized as follows:—

ANACHARIS, Richard.

Flores dioici. Masc. Spatha tubulosa, ore inflato bifido, uniflora; flore pedicellato. Perianthium sexpartitum, laciniis exterioribus

calycinis ovato-oblongis; interioribus petaloideis linearibus, aut nullis. Stamina 9; filamenta basi in columnam brevem connata; antheræ oblongæ, basi affixæ, loculis connectivo angusto sejunctis.—*Fem.* Spatha tubulosa, ore paululum dilatato bifido obliquo, uniflora. Perigonii tubus filiformis, elongatus; limbus sexpartitus, laciniis ovalibus, conformibus, exterioribus calycinis, interioribus petaloideis. Staminodia tria, laciniis exterioribus opposita, subulata; antheræ nullæ. Ovarium inferum. Stylus setiformis cum perigonii tubo connatus; stigmata tria, bifida vel emarginata. Bacca subtrigona, unilocularis, oligosperma.—Herbæ perennes (vel annuæ, *Rich.*)*, aquaticæ, caulescentes, radicantes. Folia verticillata vel opposita, sessilia. Spathæ axillares.

Anacharis, *Rich. in Mém. de l'Institut*, 1811, ii. p. 61. t. 2 (mas).
Udora, *Nutt. Gen. N. Amer. Plants*, ii. 242.

A. Alsinastrum (nov. sp. ?); foliis ternis ovali-oblongis obtusis subtilissime serrulatis, spatha floris masculi (ignota), floris feminei tubulosa ovarium sessilem pluries superante apice bifida, perigonii laciniis latis subæqualibus, stigmatibus ligulatis reflexis emarginatis.

Hab. In ponds connected with the canal at Foxton Locks near Market Harborough, Leicestershire, where it was discovered by Miss Mary Kirby, flowering sparingly, at the beginning of September 1847.

Plant submersed; stem solid, round, semitransparent, several feet long, branching at irregular and distant points, clothed throughout with whorls of leaves. Leaves three (rarely four) in each whorl, oblong, 3–4 lines long, $1\frac{1}{2}$ –2 lines broad, obtusely-pointed, minutely and closely serrulate, diaphanous, formed throughout (a continuous semitransparent midrib excepted) of longitudinal rows of small oblong green cells, of which the two or three marginal rows are colourless and quite transparent; edge furnished with very minute closely-placed (except towards the base, where they are altogether wanting or very distant) spinulose teeth pointing forwards; end formed of two curves meeting at an obtuse angle and tipped with a spinous point similar to the marginal ones; uppermost leaves blunter than the lower ones, and often quite obtuse; all spreading at right angles from the stem, their extremity rather reflexed; lower internodes about as long as the leaves, lowest much longer and with opposite and short

* *A. callitrichoides*, *Rich.*, is expressly stated by that author to be annual, our plant is undoubtedly perennial. In a growing plant, now (Dec. 22, 1847) before me, the old stem is losing its leaves, which have nearly all decayed and fallen off, and appears to be itself on the point of death, but several clusters of young shoots have sprung from it, at the base of which roots are produced. In the spring each of these clusters will probably appear to be an independent young plant. This may account for the supposed annual duration of some of the species.

leaves, upper scarcely half their length; the node marked by a transverse dull red line. Roots long, threadlike, diaphanous, from the points at which branches have sprung.—Female flowers from the axils of the upper whorls, solitary. Sheaths sessile, solitary, linear, slightly enlarged at the end, deeply bifid. Flower sessile; tube very long (so as to reach the surface of the water), filiform; limb six-parted; divisions oval, similar, three exterior, three interior rather narrower and more acute. Filaments three, subulate, without anthers. Style adnate to the tube; stigmas ligulate, reflexed, notched, fringed.—Male flowers unknown.

A. Nuttallii (Planch.), *Udora canadensis* (Nutt.), from New Jersey, closely resembles this, differing in the acute termination of its leaves, and apparently its less deeply divided sheath: its flowers are not in a state admitting of examination. *A. canadensis* (Planch.) has lanceolate-linear leaves and a much shorter sheath. The latter differs from the former by not having any inner divisions to the perianth of its male flowers. Our plant is clearly not *A. canadensis*, but it may be *A. Nuttallii*, the want of male flowers totally preventing its absolute determination. As the genus *Anacharis* is, as yet*, confined to the American continent, it has been thought better to give a distinctive name to our plant (derived from its resemblance to *Elatine Alsinastrum*), so as to prevent its being confounded with the American species, and thus extending their range far beyond what may prove to be their natural limits. Should either of them eventually be shown to be identical with our plant, one of the names will of course drop; and as that species to which ours is the most nearly allied is now for the first time distinguished from the *Elodea canadensis* of Michaux, it will then be for botanists to determine which name should be retained.

Shortly after receiving this plant from Mr. Bloxam, I was informed that similar ones had been found in Hampshire and near Dublin. I am indebted to my friend Mr. H. Collins for a specimen from the former locality, an ornamented pond, at Leigh Park, about eight miles from Chichester. He informs me that there is very great probability of its having been introduced there accidentally with the roots of *Nymphaea odorata*, received by the gardener a few years since from America. The plant had not been noticed in the pond previously to those roots being put into it, and it appeared shortly afterwards in small quantity, but soon rapidly increased. Mr. Scott, the intelligent gardener at Leigh Park, has sent three female flowers to Mr. Collins and Mr. Borrer, one of which I have examined carefully. It has three

* The *Udora pomeranica* and *U. lithuanica* of European authors have never been seen in flower, and have much more the look of *Hydrilla* than *Anacharis*, but their genus is at present undeterminable.

broad calycine segments; three narrower, shorter, perhaps spatulate, coralline segments; three broadly linear barren filaments; and two long, greatly recurved, possibly emarginate, stigmas. The upper part of the plant to which one of the flowers is attached is exactly like a similar portion of *A. Nuttallii* from New Jersey, for which I am indebted to Sir W. J. Hooker, and I have no doubt that they are the same species. It is a curious coincidence, that the only perfect flowers of the Market Harborough *A. Alsinastrum*, and also of the Leigh Park *A. Nuttallii* which I have been able to examine, have no trace of more than two stigmas.

Mr. Mackay accompanies specimens of the Dublin plant (found growing in a small pond in the garden of J. D'Olier, Esq., at Collignes near that city,) by the statement that it is in company with *Aponogeton* and other rare aquatic plants, and was in all probability introduced with them. Flowers have not been observed upon it, and its name must therefore remain doubtful—even its genus. In appearance it is almost exactly like *A. Nuttallii*, with which it agrees in having narrower and acuter leaves than *A. Alsinastrum*.

The question now arises, May not the *A. Alsinastrum* have been introduced? To this I answer in the words of the Rev. A. Bloxam, who kindly visited its place of growth and supplied me with numerous living and dried specimens. He says, in answer to an inquiry of mine, "I can find no reason to doubt the *Udora* being a true native. Numbers of other water-plants grow in the same locality, *Potamogetons* of various kinds, &c." He adds, that "although not observed until this year, I should suppose that it must have been a long period in the ponds from the great quantity of it."

Synopsis specierum Anacharidis et Apalanthés; auctore

J. E. PLANCHON, Scien. Doc.

ANACHARIS, *Richard.*

1. *A. callitrichoides* (Rich.); foliis oppositis vel ternis linearibus acutis minute serrulatis, spatha pedicello (brevis) cylindrico continua sensim a basi ad apicem dilatata lineari-oblonga apice bifida, antheris (polline emisso) siccitate cærulescentibus, stigmatibus perianthii laciniis longioribus ad medium bifidis; cruribus linearibus.

Hab. in Brasilia australiori; Montevideo, *Commerson*; La Plata (absque loco proprio), *Tweedie* in Herb. Hooker.

A. callitrichoides, *Rich. in Mém. Inst.* 1811, ii. 7. t. 2.

Character e specimine Tweediano, quod floribus utriusque sexus gaudet, masculis, sicut folia, cum icone Richardiano plane congruentibus, femineo unico et pro investigatione nimis imperfecto.

2. *Anacharis Matthewsii* (Planch.); foliis 3-4-nis dense imbricatis, spatha mascula (ante dehiscentiam) breve pedunculata ellipsoidea, perianthii laciniis exterioribus oblongis interioribus linearibus et petaloideis subæquilongis, antheris (novem) subsessilibus polline emisso non cærulescentibus.

Hab. in Peruviae ditone Ubuamantanga, prov. Canta, *Matthews*, No. 581. In aqua fluente rivulorum.

Folia 7-8 lin. longa, 1 lin. lata, haud acuminata sed apice subrotundato breviter acutata, patentia vel erecto-patentia internodiis pluries longiora. Antheræ lineari-oblongæ.

3. *A. Alsinastrum* (Bab.); foliis ternis ovali-oblongis obtusis subtilissime serrulatis, spatha floris masculi (ignota), floris feminei tubulosa ovarium sessilem pluries superante apice bifida, perianthii laciniis latis omnibus subæqualibus, stigmatibus ligulatis reflexis emarginatis.

Hab. in Anglia.

Folia 3-4 lin. longa, $1\frac{1}{2}$ -2 lata, in apice caulis ramulorumque confertis, in parte infima ramulorum parvis distantibus oppositis, sessilia, squarrosa, apice paululum reflexa.—*Babington*.

4. *A. Nuttallii* (Planch.); foliis 3-4-nis oblongo-linearibus subtiliter serrulatis interdum obtusis, petalis floris masculi ligulato-spathulatis, stigmatibus ligulatis reflexis bifidis.—*Nuttall*.

Hab. in America septentrionali, sed loci natales dum stirps cum duobus aliis hucdudum confusa sit, observationibus novis denuo notandi.

Udora canadensis, *Nutt. Gen. N. Amer. Pl. ii. 242. excl. syn. Michx.*

Huc fere absque dubitatione refero stirpem prope Novam Cæsaream a cl. Torreyo lectam cujus folia variant late vel anguste linearia, sed tamen sunt semper acutiora quam illa *A. Alsinastrum*. Spatha floris feminei sessilis, tubulosa, ovario adpressa et super eum producta, apice acute bifida. Flores pauci et pro examine accurato nimis imperfecti.

5. *A. chilensis* (Planch.); foliis ternis lineari-oblongis obtusis subtilissime serrulatis, spatha floris feminei sessili tubulosa apice hinc fissa, stigmatibus tribus bipartitis perianthii laciniis exterioribus reflexis longioribus.

Hab. in Chili prope Valparaiso, *Cuming*, No. 636.

Folia illis *A. Alsinastrum* plane similia, unguicularia, 2 lin. lata, in parte infima ramulorum opposita. Spatha in flore unico suppetente folii tertiam partem vix æquante. Tubus perigonii pollicaris; limbus reflexus, laciniis exterioribus circiter 1 lin. longis, interioribus Styli tres, profunde bipartiti, laciniis linearibus.

6. *A. canadensis* (Planch.); foliis ternis lineari-oblongis vel anguste linearibus, apice interdum rotundatis breve acutatis, spatha floris masculi (breve pedunculata) ventricoso-obovata, floris feminei sessilis tubulosa ovarium sub 5-plo longiore apice bifida, perianthii floris masculi laciniis interioribus nullis.

Hab. in America septentrionali. Saskatchewan, *Drummond* (specimina mascula). Canada, *Cleghorn* (specimina feminea imperfecta).

Elodea canadensis, *Michx. Fl. Bor. Amer.* i. 20.?

APALANTHE, *Planchon.*

Elodea sp., *Richard.* *Udora* sp., *Endlicher* (sed character genericum ex elementis heterogeneis infauste exstructum).

Flores hermaphroditi, cæterum femineis *Udora*, præter antherarum præsentiam, in omnibus conformes. Stamina in specie typica Guyanensi vidi interdum haud æquidistantia, nec cum stigmatibus regulariter alternantia, sed alterum liberum inter stigmata duo, altera duo inter se filamentis plus minus concreta et cum crure altero unius stigmatorum bifidorum semiconnata. Antheras vidi potius late ellipticas quam cordatas; pollinis granula lævia, 3-4-natim cohærentia. Dehiscencia antherarum mihi obscura. *Cl. Bonplandius*, in descriptione *Apal. (Elodea) granatensis*, stylum in collo longo calycis liberum adesse assertit; sed character illud, cum oculatissimum Richardum fugerit, in vivo rursus inquirendum est. Ipse nihil vidi ad confirmationem observationis istæ tendens.

1. *Apal. guyanensis* (Planch.); foliis 3-9-nis lanceolato-linearibus (vel anguste linearibus) a basi ad apicem sensim angustatis acutis haud recurvis, spatha sessili cylindracea "ovarium in ipsa sessile" superante; stigmatibus (sæpius) bifidis: cruribus apice dilatatis.
Hab. in Guyana, *Rich.* Demerara, *Parker*, in Herb. Hook.

Elodea guyanensis, *Rich. in Mém. Inst.* 1811. ii. 4. t. 1.

2. *Apal. granatensis* (Planch.); foliis 7-15-nis, anguste linearibus acutissimis, spatha sessili ovarium in ipsa sessile subæquante.
Hab. in aquis Novæ Granatæ prope Guaduas inter Honda et Cune. *Humboldt et Bonpland.*

Elodea granatensis, *Humb. et Bonpl. Pl. Æquin.* ii. 150. t. 128.

3. *Apal. Schweinitzii* (Planch.); foliis sæpius 3-nis (in parte infima ramorum oppositis) lanceolato-linearibus (vel subovalibus) acutis subtilissime serrulatis, spatha sessili cylindrica acute bifida florem demum longe pedicellatum exerente.

Hab. in Americæ septentrionalis provinciis confederatis (United States), loco proprio non indicato, *Schweinitz* in Herb. Hook.

Serpicula occidentalis, *Pursh? Fl. N. Amer.* i. 33 (ob flores hermaphroditos triandros, sed diagnosis manca imprimis quoad floris situm non sufficit).

Herba omnino facie *Anacharidis Nuttallii* vel *A. canadensis*. Folia in ramulorum parte inferiore opposita, abbreviata, subovalia, 2-2½ lin. longa, internodiis multo breviora; cætera linearia, patenti-erecta, internodiis multo longiora ideoque laxè imbricata, acuta nec tamen acuminata. Spatha 4-5 lin. longa. Pedicellus floris 6-8 lin. longus. Ovarium anguste ovatum in collum 1-1½ pollicarem sensim angustatum. Lacinia perianthii exteriores latiuscule lineares, patentes,

pellucidæ; interiores petaloideæ, tenerrimæ. Stamina tria; filamenta gracilia, antheris longiora; antheræ obovatæ, compressæ, loculis granulis pollinis inter se conglomeratis repletis, dehiscentia ignota. Stigmata tria, bipartita (?), cruribus recurvis perianthii laciniis exterioribus duplo longioribus.

Obs. *Elodea canadensis* (Michx.) a specie supra descripta differt, ob verba auctoris in delineatione characteris generici, "ovarium ad caulem sessile." Inde stirps ad *Anacharidem canadensem* (Planch.) verosimiliter recte referta.

EXPLANATION OF PLATE VIII.

Anacharis Alsinastrum, natural size, with a detached flower showing its very long tube.

Note.—The flower, the only one obtained, is doubtless imperfect, by wanting the third stigma.

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| <ul style="list-style-type: none"> a. A whorl of leaves. b. Summit of the sheath. c. A female flower. d. Stigmatic fringe. | } | Magnified. |
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We are indebted to Mr. J. W. Salter for the beautiful drawing, made for the 'Supplement to English Botany,' from which our plate is engraved.

IX.—On the Anatomy of Eolis, a genus of Mollusks of the order Nudibranchiata. By ALBANY HANCOCK and DENNIS EMBLETON, M.D., F.R.C.S.E., Lecturer on Anatomy and Physiology in the Newcastle-upon-Tyne School of Medicine.

[Continued from vol. xv. p. 88.]

[With two Plates.]

Organs of Generation.

FOR the sake of convenience we will treat of these in the following order:—

1st. Male apparatus: testis and penis, and mechanism for intromission and retraction.

2nd. Female apparatus: ovary with oviduct and accessory glands.

3rd. Complementary androgynous organs: spermatheca and its channels.

The generative organs lie for the most part beneath all the other viscera, and occupy the greatest part of the cavity of the body. The ovary at the season of reproduction nearly fills up the posterior half of the body, and the median line divides it into two almost symmetrical parts.

The other organs lie in front of the ovary, and extend as far forwards as the sides of the buccal mass; they are unsymmetrical,